

US009107109B2

# (12) United States Patent Lundby et al.

### (54) METHOD AND APPARATUS FOR DETERMINING A DATA RATE IN A HIGH RATE PACKET DATA WIRELESS COMMUNICATIONS SYSTEM

(75) Inventors: **Stein A. Lundby**, Solana Beach, CA

(US); **Leonid Razoumov**, San Diego, CA (US); **Gang Bao**, San Diego, CA (US); **Yongbin Wei**, San Diego, CA (US)

(73) Assignee: QUALCOMM Incorporated, San

Diego, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35 U.S.C. 154(b) by 2140 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: 11/165,882

(22) Filed: Jun. 24, 2005

(65) **Prior Publication Data** 

US 2005/0254465 A1 Nov. 17, 2005

#### Related U.S. Application Data

- (63) Continuation of application No. 09/697,372, filed on Oct. 25, 2000, now Pat. No. 6,973,098.
- (51) **Int. Cl. H04J 1/16** (2006.01) **H04L 1/00** (2006.01)

(Continued)

(Continued)

# (10) Patent No.: US 9,107,109 B2

(45) **Date of Patent:** \*Aug. 11, 2015

#### (58) Field of Classification Search

#### (56) References Cited

#### U.S. PATENT DOCUMENTS

3,018,663 A 1/1962 Dunlop 3,534,264 A 10/1970 Blasbalg et al. (Continued)

#### FOREIGN PATENT DOCUMENTS

BR 9607900 A 1/1998 BR 9607621 A 6/1998 (Continued)

#### OTHER PUBLICATIONS

3rd Generation Partnership Project, Technical Specification Group Radio Access Network 25.101. Section 9.3, User Equipment (UE) Radio Transmission and Reception (FDD). (Release 6). Dec. 2005. (Continued)

Primary Examiner — Phuc H Tran (74) Attorney, Agent, or Firm — Dalei Dong

#### (57) ABSTRACT

In a wireless communication system a method for combination transmission of packet data and low delay data. In one embodiment a parallel signaling channel provides a message to receivers indicating a target recipient of packet data. The message also identifies the transmission channels used for packet data transmissions. Each receiver may then selectively decode only packets where the message identifies the receiver as a target recipient. The data packets stored in a buffer are ignored if the target recipient is another mobile unit. In one embodiment, the message is sent concurrently with the data packet on a parallel channel. In one embodiment, the message is punctured into the high rate packet data transmission.

## 12 Claims, 10 Drawing Sheets

